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## **AUTOMATIC HAIR WASHING DEVICE**

### **CROSS-REFERENCE TO RELATED APPLICATIONS**

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This application claims the benefit of the filing date and priority of co-pending provisional application serial number 60/444,694 filed 02/04/2003.

### **BACKGROUND OF THE INVENTION**

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#### **1. Field of the Invention**

The present invention relates to hair washing devices. In particular, the present invention is related to devices that automatically wash and rinse human hair.

#### **2. Description of the Related Art**

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Devices for washing human hair are known in the art. Automatic devices for washing human hair are also known in the art.

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Some of the devices of the prior art have a basin for holding the head of the user, and a cover for enclosing the hair of the user and with the face outside. These devices of the prior art may employ rotating manifolds for spraying liquids from stationary jets thereon onto the hair being washed. The manifolds are

generally arcuate in shape.

Exemplary of the Patents of the related art are the following: U.S. Patents 1,244,535; 3,521,647; 4,834,121; 4,407,028; 5,010,604; 5,906,012; and 6,249,922 B1; U.S. Patent Publications US 2001/0001884 A1 and US 2002/0184703 A1; Japan Publication Numbers 06217820 and 08150011; and European Patent Office EP 0 965 285 A1.

### BRIEF SUMMARY OF THE INVENTION

In accordance with the present invention there is provided an automatic hair washing device including a basin having a hollow interior, a plurality of rotating nozzle assemblies rigidly connected to the interior of the basin for spraying a plurality of selected liquids onto the hair of the user of the automatic hair washing device of the invention, and a hood rotatably connected to the basin, the hood having flexible face cover therein for covering the hair and ears of the user.

### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIGURE 1 is a partly cut-away perspective view of a person washing their hair in the automatic hair washing device of the invention with a hinged hood placed around the person's face;

FIGURE 2 is a partly cut-away perspective view of a person utilizing the automatic hair washing device of the invention with the hinged hood in the open position;

FIGURE 3 is a partly cut-away partly schematic elevational view of

the back side of the cabinet of the automatic hair washing device of the invention;

FIGURE 4 is a cross-sectional view taken along lines 4-4 of Figure 1;

FIGURE 5 is a partly cut-away plan view of the control apparatus of the invention; and

FIGURE 6 is a detailed view of one of the spray nozzles of the invention.

### DETAILED DESCRIPTION OF THE INVENTION

The present invention provides an automatic hair washing device which sprays shampoo, hair conditioner, and rinse water to the hair of the user through rotating nozzle assemblies fixed to the inside of a basin. A face and neck cover is provided to ensure liquid passage to the side of the neck, front of the ear and forehead of the user. Proper drainage under all conditions is accomplished by an overflow drainage outlet in the basin beneath the level of the head of the user. A manual cut-off device is provided for supplementary and finish washing. The basin receives the head and neck of the user at angle of approximately 45 degrees with the horizontal to provide comfort during washing without having the user lie in a supine or horizontal position.

Referring now to the drawings, and in particular to Figure 1, the automatic hair washing device of the invention is generally indicated by the numeral 10. Washing device 10 includes a basin generally indicated by the numeral 12 having a unique pivotal hood generally indicated by the numeral 14 for selectively covering the hair and ears and exposing the face of the person utilizing the device 10 of the invention. Basin 12 preferably sits upon the top 13a of the cabinet

generally indicated by the numeral 13. Hood 14 pivots in the directions indicated by the double-headed arrow 16 in Figure 2, and is rotatably connected to basin 14 by hinge 18. As shown in Figure 4, hinge 18 rotates about a horizontal pin 18a connected to the top of basin 12.

5 Hood 14 has an outer edge 14a which preferably has a soft sealing surface which forms a water tight seal with the upper surface 12a of basin 12 and the neck of the user. Upper surface 12a has an opening 12c which receives the head and hair of the user.

Hood 14 has a unique flexible face cover generally indicated by the  
10 numeral 15 connected thereto. Flexible face cover 15 has an elastic inner edge 15a which can be stretched over the face of the person utilizing the device 10 of the invention to prevent liquids sprayed onto the hair from flowing under the inner edge 15a onto the face and eyes person utilizing the device 10 of the invention. The face of the user is exposed between the inner edge 15a, and the ears of the user is covered  
15 by inner edge 15a.

Basin 12 has a generally cylindrical interior basin generally indicated by the numeral 20. Basin 12 has a neck support 12d which has an inner flat surface 12e inclined at an angle of about 45 degrees with the horizontal. The neck support 12d of basin 12 receives the head and neck of the user at angle of approximately 45  
20 degrees with the horizontal to provide comfort during washing without having the user lie in a supine or horizontal position. Neck support 12d is covered with a soft, flexible material which forms a liquid seal with the neck.

As shown in Figures 4 and 6, basin 12 has a plurality of nozzle assemblies generally indicated by the numeral 22 rigidly connected to the interior  
25 wall 20a of basin 20 which are directed toward the hair of the user. Preferably eight

nozzle assemblies 22 are employed having three rotating jets 22b thereon are utilized, with four of the nozzle assemblies 22 being shown in the cross-sectional view of Figure 4. The opposite side of basin 20 and nozzles 22 are identical to those shown in Figure 4. The nozzle assemblies 22 are positioned on the interior wall 20a of basin 12 to ensure that the entire amount of hair of the user is sprayed by nozzle assemblies 22.

A preferred nozzle assembly 22 is shown in detail in Figure 6. Liquids are supplied to nozzle assembly 22 by pipe 21. Nozzle 22 has a stationary circular housing 22a rigidly connected to the inner wall 22a of basin 12. Each jet 22b is rigidly connected to a rotating disc 22d. Rotating disc 22d rotates as indicated by the arrow 23 in Figure 6. Preferably there are three jets 22b in each rotating disc 22d. The streams of liquid 22c exiting from jets 22b rotate as indicated by the arrow 24 in Figures 4 and 6 to insure a thorough wetting, washing, conditioning and rinsing of the hair of the person utilizing the automatic hair washing 10 of the invention. Each jet 22b is rigidly connected to a rotating disc 22d device 10 of the invention.

Rotating nozzle assemblies 22 ensure thorough application of liquid shampoo, hair conditioner, and water to the hair of the user. As shown in Figure 4, the rotating nozzle assemblies 22 are rigidly connected to the interior wall 20a of basin 12 provide a massaging action to the hair and scalp of the user for through cleansing, conditioning, and rinsing. Liquids sprayed from nozzles 22 flow by gravity into the bottom 20b of basin 20. Liquids flowing into the bottom 20b of basin 20 exit basin 20 through drain pipe 26, conventional curved drain trap pipes 26a and 26b, pipes 26c and 26d, to an existing sewer line as shown in Figure 3.

An overflow pipe 28 having entrance 28a in basin interior wall 20a

located above basin bottom 20b is provided to provide additional drainage in the event that drain pipe 26 becomes plugged with loose hair or other debris. The entrance 28a to overflow pipe 28 is preferably located at the approximate distance of the bottom of the head of the person utilizing the device 10 of the invention.

5 Overflow pipe 28 is connected to drain pipe 26 as shown in Figure 3 above drain trap pipe 26a to convey any liquids flowing through overflow pipe 28 through drain trap pipes 26a and 26b prior to flowing through pipes 26c and 26d to an existing sewer line.

Liquids are supplied to nozzles 22 through pipes 21 which are  
10 connected to main supply pipe 30. Main supply pipe 30 may receive water from water supply pipe 32, and shampoo and/or hair conditioner from secondary supply pipe 34.

As shown in Figure 3, water is supplied to water supply pipe 32 from hot water supply pipe 36 and cold water supply pipe 38. A hot water supply valve  
15 36a and a cold water supply valve 38a are provided to selectively connect or disconnect hot water from a hot water source 36b and cold water from a cold water source 38b to hot water supply pipe 36 and cold water supply pipe 38.

Valve 36a is connected to hot water supply pipe 36 by pipe 36c and valve 38a is connected to cold water supply pipe 38 by pipe 38c to enable hot water  
20 to shut off when device 10 is not in use. Valve 36a is connected to hot water source 36b by pipe 36d and valve 38a is connected to cold water source 38b by pipe 38d to enable cold water to be shut off when device 10 is not in use. Hot water source 36b may be a conventional hot water tank (not shown) and cold water source 38b may be a convention municipal water source, or a well.

25 The temperature of the water flowing through water supply pipe 32 is

monitored by a conventional temperature sensor 40 well known in the art labeled  
“TEMP SENSOR” in Figure 3. An electrically conductive wire 42 extends from  
temperature sensor 40 to a conventional water temperature control device generally  
indicated by the numeral 44 labeled “TC” in Figure 3. Water temperature control  
5 device 44 is located in the control console generally indicated by the numeral 45,  
which is preferably connected to basin 12 by joining member 45a. As best shown in  
Figure 5, water temperature control device 44 has a rotatable dial 44a thereon which  
cooperates with a scale 46 thereon to enable the temperature of water entering pipe  
32 to be varied as desired.

10 The temperature of water entering water supply pipe 32 is varied by  
solenoid operated valve 48 which is connected to hot water supply pipe 36 and  
controls the volume of hot water flowing therefrom into water supply pipe 32, and  
by solenoid operated valve 50 which is connected to cold water supply line 38 and  
controls the volume of hot water flowing therefrom into water supply pipe 32.  
15 Solenoid operated valve 48 receives an electrical signal through electrically  
conductive wire 48a connected thereto and to water temperature control device 44,  
and solenoid operated valve 50 receives an electrical signal through electrically  
conductive wire 50a connected thereto and to water temperature control device 44,  
both of which electrical signals control the relative volume of the flow of hot and  
20 cold water flowing through valves 48 and 50, respectively, and thus control the  
temperature of the water in water supply pipe 32 through the controlled blend of hot  
and cold water.

Shampoo is contained in vessel 52 labeled “S” in Figure 3 which  
preferably is contained inside of cabinet 13 and sits upon shelf 13a in cabinet 13.  
25 Shampoo from vessel 52 is pumped from vessel 52 through conduit 52a, through

solenoid operated valve 53, and through pipe 56 by pump 58 into secondary supply pipe 34. Solenoid operated valve 53 receives an opening and closing electrical signal through electrically conductive wire 53a connected thereto and to the timing and selection device generally indicated by the numeral 68 and labeled "T" in Figure 3, and pump 58 receives an activating and deactivating electrical signal through electrically conductive wire 58a connected thereto and to the timing and selection device 68. Electrical energy is supplied to selection device 68 through electrically conductive wires 68a and 68b and electrical plug 68c and to water temperature control device 44 by electrically conductive wires 44b and 44c extending from timing and selection device 68.

Timing and selection device 68 is located in the control console generally indicated by the numeral 45. As best shown in Figure 5, timing and selection device 68 has a rotatable dial 68a thereon which cooperates with a scale 70 thereon to indicate which liquid is being applied to the hair, such as shampoo mixed with water at the "START" position on scale 70, pure water during the rinse cycle as indicated by the hand-held spray nozzle 72 on scale 70 to remove shampoo from the hair, conditioner after rinsing with pure water as indicated by the bottle 74 on scale 70 having the label "C" thereon, and a final rinsing as indicated by the hand-held spray nozzle 76 on scale 70. Preferably, a clock is built into timing and selection device 68 to provide washing, hair conditioning, and rinsing according to a pre-selected timing cycle. Timing and selection device 68 may be reset manually for providing for supplementary rinsing, conditioning, and finish washing by resetting dial 68a after a complete cycle.

As shown in Figure 3, hair conditioner is contained in vessel 60 labeled "C" which preferably is contained inside of cabinet 13 and sits upon shelf 13a in



cabinet 13 adjacent to vessel 52. Hair conditioner from vessel 60 is pumped through conduit 60a, through solenoid operated valve 62, and through pipe 64 by pump 66 into secondary supply pipe 34. Solenoid operated valve 62 receives an opening and closing electrical signal through electrically conductive wire 62a connected thereto and to the timing and selection device generally indicated by the numeral 68 and labeled "T" in Figure 3, and pump 66 receives an activating and deactivating electrical signal through electrically conductive wire 66a connected thereto and to the timing and selection device 68.

Each of the electrically conductive wires 48a, 50a, 53a, 58a, 62a, and 68a are preferably bundled into cable 45a. Cable 45a extends from control console 45 through opening 13b in the top 13a of cabinet 13.

As shown above, shampoo, hair conditioner and water at a desired temperature can be applied and repeated as desired by appropriate adjustment of temperature control device 44 and timing and selection device 68. The stationary nozzle assemblies 22 of the invention provide thorough and soothing application of shampoo, hair conditioner, and rinse water to the hair of the user.

Although the preferred embodiments of the invention have been described in detail above, it should be understood that the invention is in no sense limited thereby, and its scope is to be determined by that of the following claims: